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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,113	07/11/2001	Katsuhiko Mochizuki	1232-01	7939

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EXAMINER	
BUTLER, PATRICK NEAL	

ART UNIT	PAPER NUMBER
1742	

NOTIFICATION DATE	DELIVERY MODE
12/27/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pto.phil@dlapiper.com

Office Action Summary	Application No. 09/889,113	Applicant(s) MOCHIZUKI ET AL.	
	Examiner Patrick Butler	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-19,21,22 and 24* is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5)☐ Claim(s) ____ is/are allowed.

6)☒ Claim(s) *15-19,21,22 and 24* is/are rejected.

7)☐ Claim(s) ____ is/are objected to.

8)☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on ____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. ____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 15-19, 21, 22, 24, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto (EP 1033422A1) in view of Rowan et al. (US Patent No. 4,851,172), Toshio et al. (Japanese Patent Publication No. JP 52066769 A), and Palmer (US Patent No. 4,529,655), solely, or further in view of Negishi et al. (US Patent No. 4,069,565).

With respect to Claim 15, Fujimoto teaches a method of producing a poly (trimethylene terephthalate) fiber where the yarn is drawn, heat treated and then subjected to a relaxation treatment (a polymer substantially comprising polytrimethylene terephthalate) [0035]. The intrinsic viscosity of the polymer is 0.4 – 1.5, preferably 0.7 – 1.2 (intrinsic viscosity at least 0.7) [0016]. In the process, the multifilaments are extruded from a spinning machine (method of producing multifilament yarn; melt spinning) [0035] and wound round a first roll heated at 30 – 80 °C and then a second heated roll at 100 to 160 °C (hauling off the multi-filament yarn via a first heated roll; second heated roll; subjecting the multi-filament yarn to a heat-treatment at the second roll; subjecting the multi-filament yarn to a relaxation heat treatment; the second heated roll at 105-180 °C) [0038]. The multifilaments are wound around a first roll at a speed

of 300-3,500 m/min (at a spinning rate of at least 2,000 m/min) ([0036] and [0037]), drawn in a single drawing step between the first roll 11 and a second roll 12 at a ratio of 1.3 to 4 (subjecting the multi-filament yarn to drawing without winding up between the first heated roll and a second roll at low draw rate) [0038], wound round the second roll (by plural laps of the yarn) [0036], relaxed at a ratio of 0.8-0.999, with the ratio being the winding speed/peripheral speed of the second roll (at a relaxation factor of 10-20%) [0040], mixed by methods such as interlacing before incorporating the yarn into fabric (subjecting the multi-filament yarn to an interlacing treatment) [0045], and wound up on a winder (and winding the multi-filament yarn up as a package) [0036].

"[B]y employing the heat of a second heated roller… a relaxation heat treatment is carried out" (see Applicant's Specification, page 13, lines 12-30). Thus, Applicant's Specification clarifies that a heat treatment at a second roll is inherently sufficient to provide a relaxation heat treatment between the second heated roll and a third roll or between the second heated roll and a winder. Such inherency is supported by the heat of the roller transferring to the wrapped yarn which then leaves the roller and continuing its heat treatment until it cools.

Fujimoto fails to teach that the second heated roll used for the relaxation treatment has a surface roughness of 1.5 S – 8 S as required by claim 15.

Rowan is directed to a process for high speed, multi-end polyester yarn (Title). Rowan teaches manufacturing a multi-filament yarn by extruding, passing the filaments through drawing rolls, then through relaxing rolls, and then finally through a conventional air interlacing jet and then wound up (columns 2 and 3). The surface finish

(R_a) value for the rolls other than the first encountered roll can be between 35 and 120 microinches (0.89 – 3.0 micrometers) (column 4, lines 10 – 20). On page 14 of Applicant's Specification, Applicant indicates that 1.5 S – 8 S is equivalent to 0.8 – 6.3 micrometers as required by claims 15. Rowan suggests that the use of matte rollers produce a yarn with excellent mechanical qualities (column 4, lines 25 – 40).

Rowan does not appear to explicitly teach that R_{max} of the R_a is within the claimed range (e.g., 1.5 S – 8 S).

However, in this regard, Rowan teaches this value for R_a as previously described as well as making the surface smooth, which would minimize the variation in the surface (see col. 5, line 4). As such, Rowan recognizes that the respective R_{max} is a result-effective variable. Since R_{max} is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum R_{max} applied in the process of Rowan through routine experimentation based upon minimizing the variation in R_a to achieve a smooth surface (see col. 5, line 4).

Since Fujimoto lacks disclosure to specific details about the surface roughness of the second heated roller, it would have been necessary and thus obvious for one of ordinary skill in the art practicing the invention of Fujimoto to look to the prior art as exemplified by Rowan to provide the details of the relaxation roller's surface texture. As heated matte rollers having a temperature of at least 140 °C and a surface finish value of 0.89 – 3.0 micrometers which has a relaxation between 1 – 10 percent produces a yarn with excellent mechanical qualities (see Rowan, col. 4, lines 33-35), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use

the heated matte finish relaxation rollers of Rowan in the invention of Fujimoto, motivated by the expectation of successfully practicing the invention of Fujimoto and in order to produce a yarn with excellent mechanical qualities (see Rowan, column 4, lines 25 – 40).

The claimed step of preventing the multi-filament yarn from winding back onto the second heated roll during the relaxation heat treatment is stated by the claim to result from reducing the frictional coefficient via a claimed surface roughness and temperature. Fujimoto teaches the claimed second heated roller temperature as described above, and Rowan, as combined, teaches the claimed surface roughness. Thus, Fujimoto in view of Rowan teach the claims steps for preventing the multi-filament yarn from winding back onto the second heated roll.

Fujimoto fails to expressly teach intermingling to a specific CF value.

Toshio teaches interlacing to a CF value of 10-100 with a synthetic multifilament fiber (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Toshio's CF value with Fujimoto's process of making filaments and intermingling in order to manufacture a sizeless, twistless fabric (see Toshio) and to give a fabric thus obtained excellent softness, stretchability properties, and color developing properties (see Fujimoto [0044]).

Fujimoto in view of Rowan and Toshio teach that the breaking extension of the yarn is 40% or more, the strength from a stress-strain curve of at least 3 cN/dtex, a Young's modulus of no more than 25 cN/dtex, a minimum value of a differential Young's

modulus at 3-10% elongation of no more than 6.6 CN/dtex, and an elastic recovery following 10% elongation of at least 90% principally because they teach the same claimed process.

Fujimoto teaches that winding PTT yarn is improved by cooling the yarn before winding to 0-50 °C by blowing a cold wind and that such a cooling process helps to prevent tight winding (cools the multifilament yarn; controls tension gradient) [0041]. As described above, Fujimoto teaches that the yarn is mixed by methods such as interlacing before incorporating the yarn into fabric (subjecting the multi-filament yarn to an interlacing treatment) [0045], and Rowan, as combined, teaches passing the filaments through drawing rolls and then finally through a conventional air interlacing jet and then wound up (subjecting the multifilament yarn to an interlacing treatment with an interlacing treatment nozzle that controls tension gradient) (see cols. 2 and 3). Thus, Fujimoto in view of Rowan and Toshio teach cooling before winding, controlling tension before winding, and interlacing between drawing and winding. However, Fujimoto in view of Rowan and Toshio do not appear to expressly teach an interlacing treatment nozzle controls tension gradient.

Palmer teaches that it is well known to operate interlacing jets with air at room temperature (see col. 1, lines 42-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the interlacing jets with air at room temperature as taught by Palmer in the interlacing step of Fujimoto in view of Rowan and Toshio because interlacing with air at room temperature is well known (see Palmer, col. 1, ll.

42-50), interlacing air temperature effects the yarn temperature (see Palmer, col. 2, lines 57-64), and cooling PTT before winding beneficially avoids tight winding (controls tension gradient) (see Fujimoto, [0041]).

With respect to the claim limitation of “nozzle,” the interlacing jets taught by Fujimoto, Rowan, and Palmer necessarily include a nozzle because of the acceleration mechanics of a jet.

However, if it is held that a jet does not necessarily include a nozzle for acceleration, Negishi teaches using a fluid jet nozzle within an air jet interlacing apparatus (see abstract and col. 8, lines 14-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use fluid jet nozzle as taught by Negishi in the interlacing apparatus of Fujimoto in order to provide interlaced yarn that contains a desired degree of interlacing for subsequent processing, is free of undesired lengths without interlacing, and requires minimal air jetting for the desired degree of compactness (see Negishi, col. 1, line 63 through col. 2, line 12).

With respect to Claim 16, Fujimoto teaches that the intrinsic viscosity of the polymer is 0.4 – 1.5, preferably 0.7 – 1.2 (intrinsic viscosity at least 0.8) [0016].

As to claim 17, Fujimoto teaches that multifilaments are extruded from a spinning machine at a temperature from 250 – 290 °C [0033], which is 22 – 62°C higher than the melt temperature.

As to claims 18, Fujimoto teaches that the fibers are drawn on the first roll heated at 30 – 80 °C having a peripheral speed of 300 to 3,500 m/min without winding thereon (>3,000 m/min) [0035].

As to claim 19, Fujimoto teaches in Example 13 that the relaxation ratio is 0.88 (see Table 1 continued, Example 13), which is equivalent to a relaxation factor of 12%.

With respect to Claim 21, Rowan teaches that the surface finish value for the rolls can be between 35 and 120 microinches (0.89 – 3.0 micrometers) (column 4, lines 10 – 20). On page 14 of Applicant's Specification, Applicant indicates that 1.5S – 8S is equivalent to 0.8 – 6.3 micrometers as required by claims 21 (3.2 S – 6.3 S).

With respect to Claim 22, the draw temperature is -15 – 35 °C higher (10-50 °C higher) than the glass transition temperature of poly (trimethylene terephthalate), which is 45 °C.

As to claim 23, Fujimoto teaches that the fibers have the relaxation heat treatment performed on the second and third rolls at temperatures 100 – 160 °C and 120 – 150 °C respectively (page 8, lines 25 – 55).

As to claim 24, Fujimoto teaches that the draw ratio can be 2.20 in Example 13. The Examiner considers a draw ratio of 2.20 to be a "low" draw rate as required by Applicant. Fujimoto in view of Rowan and Toshio teach having strength from a stress/strain curve of at least 3cN/dtex and a breaking extension of at least 42% principally because they teach the same claimed process.

Response to Arguments

Applicant's arguments filed 28 September 2010 have been fully considered, but they are not persuasive.

Applicant argues with respect to the 35 U.S.C. § 103(a) rejections. Applicant's arguments appear to be on the grounds that:

1) Applicant's combination of elastic recovery and avoiding package tightening is an unexpected result of high breaking extension and high elastic recovery. This result is achieved by a low draw ratio in a single step drawing.

2) Rowan and Palmer do not teach making polytrimethylene terephthalate. Thus, these references may not be relied upon for teaching polytrimethylene terephthalate properties.

3) Toshio and Negishi do not teach a direct spin-draw process.

The Applicant's arguments are addressed as follows:

1) As indicated above, Fujimoto teaches the yarn is drawn in a single drawing step between the first roll 11 and a second roll 12 at a ratio of 1.3 to 4 (subjecting the multi-filament yarn to drawing without winding up between the first heated roll and a second roll at low draw rate) [0038].

1) The examiner recognizes that all of the claimed effects and physical properties are not positively stated by the reference(s). Note however that the references teach all of the claimed ingredients, process steps, and process conditions and thus, the claimed effects and physical properties would necessarily be achieved by carrying out the disclosed process. If it is applicants' position that this would not be the case: (1)

evidence would need to be presented to support applicants' position; and (2) it would be the examiner's position that the application contains inadequate disclosure in that there is no teaching as to how to obtain the claimed properties and effects by carrying out only these steps.

2) Rowan is not relied upon for teaching polytrimethylene terephthalate properties. Instead, Rowan is relied upon as recited above for teaching the details of the relaxation roller's surface texture:

> Rowan is directed to a process for high speed, multi-end polyester yarn (Title). Rowan teaches manufacturing a multi-filament yarn by extruding, passing the filaments through drawing rolls, then through relaxing rolls, and then finally through a conventional air interlacing jet and then wound up (columns 2 and 3). The surface finish (R_a) value for the rolls other than the first encountered roll can be between 35 and 120 microinches (0.89 – 3.0 micrometers) (column 4, lines 10 – 20). On page 14 of Applicant's Specification, Applicant indicates that 1.5 S – 8 S is equivalent to 0.8 – 6.3 micrometers as required by claims 15. Rowan suggests that the use of matte rollers produce a yarn with excellent mechanical qualities (column 4, lines 25 – 40).

2) Palmer is not relied upon for teaching polytrimethylene terephthalate properties. Instead, Palmer is relied upon as recited above for teaching a feature of interlacing jets and that it influences the yarn temperature:

> Palmer teaches that it is well known to operate interlacing jets with air at room temperature (see col. 1, lines 42-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the interlacing jets with air at room temperature as taught by Palmer in the interlacing step of Fujimoto in view of Rowan and Toshio because interlacing with air at room temperature is well known (see Palmer, col. 1, ll. 42-50), interlacing air temperature effects the yarn temperature (see Palmer, col. 2, lines 57-64), and cooling PTT before winding beneficially avoids tight winding (controls tension gradient) (see Fujimoto, [0041]).

3) Toshio is not relied upon for teaching features of direct spin-draw processing. Instead, Toshio is relied upon for teach a specific CF value as recited above:

Toshio teaches interlacing to a CF value of 10-100 with a synthetic multifilament fiber (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Toshio's CF value with Fujimoto's process of making filaments and intermingling in order to manufacture a sizeless, twistless fabric (see Toshio) and to give a fabric thus obtained excellent softness, stretchability properties, and color developing properties (see Fujimoto [0044]).

3) Negishi is not relied upon for teaching features of direct spin-draw processing. Instead, Negishi is relied upon as recited above if it is held that a jet does not necessarily include a nozzle for acceleration:

With respect to the claim limitation of "nozzle," the interlacing jets taught by Fujimoto, Rowan, and Palmer necessarily include a nozzle because of the acceleration mechanics of a jet.

However, if it is held that a jet does not necessarily include a nozzle for acceleration, Negishi teaches using a fluid jet nozzle within an air jet interlacing apparatus (see abstract and col. 8, lines 14-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use fluid jet nozzle as taught by Negishi in the interlacing apparatus of Fujimoto in order to provide interlaced yarn that contains a desired degree of interlacing for subsequent processing, is free of undesired lengths without interlacing, and requires minimal air jetting for the desired degree of compactness (see Negishi, col. 1, line 63 through col. 2, line 12).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is (571) 272-8517. The examiner can normally be reached on Mon.-Thu. 7:30 a.m.-5 p.m. and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. B./
Examiner, Art Unit 1742

/Christina Johnson/
Supervisory Patent Examiner, Art Unit 1742

Search Notes (continued) *09889113*	Application/Control No. 09/889,113	Applicant(s)/Patent under Reexamination MOCHIZUKI ET AL.	
	Examiner Patrick Butler	Art Unit 1742	

SEARCHED

Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)

	DATE	EXMR
EAST (US-PGPUB; USOCR; USPAT) - See Search History Printout	12/10/2009	/PB/
EAST (US-PGPUB; USOCR; USPAT) - See Search History Printout	6/30/2010	/PB/
EAST (US-PGPUB; USOCR; USPAT) - See Search History Printout	12/15/2010	/PB/

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner